

which proves that marine conditions recurred for a short time, and brought again into the lake basin such marine Silurian forms as *Beyrichia*, *Orthoceras*, and even *Graptolites*.<sup>1</sup> We are not left to conjecture the nature of Silurian insect-life, for Mr. Charles Brongniart intimated to the Paris Academy of Sciences (December 29, 1884), through M. Alphonse Milne-Edwards, the discovery of a fossil insect, the rock containing which is the Silurian sandstone of Calvados, and which is even more ancient than the strata containing the Swedish and Scottish scorpions. The specimen consists of the wing, the characteristics of which are those of the wings of *Blatta*.

It may be that, as recent scorpions feed extensively on the eggs of various Invertebrates, the Silurian species also visited the shores for the eggs of animals left bare by the tides, among which *Parka decipiens*, the eggs of its marine allies, the Eurypterids (if the latter had the habits of their near relation, the recent king-crab), would form a *bonne bouche*. If this suggestion should prove to be well founded, we may suppose that it was this habit of frequenting the shores that led the present specimens to be imbedded in marine strata, as from their completeness they could not have been borne far from their native shores.

BEN. N. PEACH

### NOTES

WE greatly regret to record the death of Dr. J. Gwyn Jeffreys, F.R.S., from a sudden attack of apoplexy, on Saturday last, at the age of seventy-six years. We hope to refer at length, in our next number, to Dr. Jeffreys's scientific work.

SIR WILLIAM THOMSON will on Monday give an address at the opening of the fine laboratories at University College, Bangor. In the evening there will be a *conversazione*.

THE premium of the Society of Telegraph Engineers and of Electricians was presented, at the annual meeting, to Prof. George Forbes, F.R.S.E., for his paper on "The relation which should subsist between the strength of an electric current and the diameter of conductors to prevent over-heating." The Fahie premium was presented to Mr. W. H. Stone, M.A., for his paper on "The physiological bearing of electricity on health." The Paris Electrical Exhibition premium was presented to Mr. H. C. Mance for his paper on "A method of eliminating the effects of polarisation and earth-currents from earth-tests." Having presented the premiums and thanked the members for their support during his year of office, Prof. Adams vacated the chair and introduced the president for 1885, Mr. C. E. Spagnoletti.

AT the recent meeting of the Government Grant Committee, Prof. Ewing, of Dundee, received a grant of 100*l.* to institute observations of earth movements on Ben Nevis. He was asked to undertake this work by the Directors of the Observatory there, and he intends to look both for minute earth tremors, such as have been observed by Rossi and Bertelli in Italy, and for slow movements of the horizon, such as those observed by Messrs. G. H. and H. Darwin at Cambridge. The isolated position of the Ben Nevis Observatory makes it particularly well suited for observations of this kind.

SIR JOSEPH LISTER, Professor of Clinical Surgery in King's College, London, has been appointed by the German Emperor a Knight of the Order Pour le Mérite for Science and Arts.

WE have received from the Fine Art Society a "remark" proof of a very fine etching, by Mr. Flameng, of Mr. Collier's portrait of Prof. Huxley, which attracted so much attention at the Royal Academy Exhibition two years ago. Doubtless many of our readers will remember the leading features of the portrait,

<sup>1</sup> A. Geikie, "Explanation of Sheet 23 of Geological Survey of Scotland," 1873, p. 14.

the etching of which will form a suitable companion to that of Mr. Darwin by the same engraver, also from a painting by Mr. Collier.

THE first arrangement for supplying private houses with electricity is now in working order in Paris. It has been placed in the Passage des Panoramas, Galerie Vivienne, for the use of all the houses in this extensive block. The motor being a gas-engine, the use of which is legal in cities, the proprietors of this lighting establishment have nothing to do with civic authorities and regulations. Six or seven shops are now lighted by about 100 Woodhouse and Rawson incandescent lamps.

THE Russian Government are preparing an expedition to Western Siberia, for the purpose of examining some sulphur deposits recently discovered there. The natives have for many years had knowledge of these deposits, but the Government have only recently been made cognisant thereof, through a report by Lieut. Kalityn. According to the statement of M. Konschin, a mining engineer, one of the deposits contains upwards of five million pood of sulphur, the number of the former being ten. Europe has hitherto been supplied with this article from Sicily, and it is hoped that the Russian deposits may compete with the mines in that island. In Russia sulphur has hitherto only been found at Tchirkota, not far from Petroffsk, in Daghestan, which has chiefly been delivered to the powder-mills. The expedition in question will leave St. Petersburg next month.

MR. H. CECIL writes to us with reference to our note on the British Museum lectures last week. "To some of us," Mr. Cecil writes, "it is a source of no little astonishment that the materials of these lectures, some of them of such surpassing interest, should not be made accessible to students and the general public in some full, substantial, and permanent form. Besides, it would surely pay. The hunger of men never was keener for every single seed-corn of threshed-out verity; and I am myself constantly asked with reference to the subjects of these very lectures: Where can I find this in accurate form, vouched by the writer's name, and open to the examination and judgment of all men?"

A MICHIGAN paper gives an account of a phenomenon that was witnessed in Orion and vicinity on the evening of December 20:—At Marshall a bright luminous ball of large dimensions, tinged with a deep green, apparently lit up the whole heavens. The light was instantly followed by a loud noise, somewhat resembling distant thunder, which continued for about one minute. The general opinion is that it was an aerolite. At Jackson the vibration was preceded by a vivid flash in the heavens, resembling lightning. The phenomena were noticed in several portions of the city. To the south it was felt quite strong. Near Hanover and Horton the quaking of the earth was observed, while the heavens for an instant were lighted by an instantaneous flash, followed by a loud report. Buildings were slightly jarred, and the people noted the motion of their houses.

THE Rev. H. Sumangala, High Priest of Adam's Peak, Ceylon, has recently contributed to the *Orientalist*, a magazine published at Kandy, a short summary of the views of Hindu astronomers on the form and attraction of the earth. The theory of Bhāskara, who flourished in the twelfth century of our era, was that the terrestrial globe, which is composed of earth, air, water, space, and fire, is of a spherical shape, and being surrounded by planets, such as the Moon, Mercury, Venus, the Sun, Mars, Jupiter, and Saturn, and by the orbits of stars, stands firm in the midst of space by its own power, without any other aid. This, he says, is a well-ascertained fact. Like the pollen in the Kadamba flower, on its surface are countries, mountains, gardens, and buildings, where Rāksasas, men, Devas, and Asuras dwell. He refutes the theory that the earth cannot stand of itself without any support by arguing that, if there be

a material support to the earth, there must be another upholder of that, and again another of this, and so on; then there will be no limit, and if, ultimately, self-support must be assumed, why not assume it in the first instance? Is not the earth one of the forms of Siva? As by nature heat is in the sun and fire, coldness in the moon, fluidity in water, hardness in stone, so mobility is in the air, and immobility in the earth. Each object has its own faculty, and "wonderful indeed are the faculties implanted in objects." As to the attraction of the earth, Bhāskara observes that the earth, possessing an attractive force, draws towards itself any heavy substance situated in the surrounding atmosphere, and that substance appears as if it falls. But whither, he asks, can the earth fall in ethereal space, which is equal and alike on every side? He ridicules the Buddhists for holding that the earth descends in unbounded space. An astronomical work anterior to Bhāskara's time says the terrestrial globe possesses Brahma's most excellent power of steadiness, and remains in space. The succession of day and night is said to be caused by the rising and setting of stars, the planet, and the zodiac. Arya Bhatta, in the sixth century, maintained the existence of a diurnal rotation of the earth round its own axis. The sphere of the stars, he states, is stationary, and the earth itself, making a revolution, produces the daily rising and setting of stars and planets.

MR. HOFFMANN, of Washington, has addressed a letter to the Anthropological Society of Paris, stating that in various ancient burial places in Southern California, and in the islands of Santa Cruz, Santa Rosa, and San Miguel, he has found instruments which he believes to be those employed in tattooing. The natives here do not tattoo themselves now, with the exception of the Haida Indians of Queen Charlotte's Island; they only paint their faces, but still many individuals bear traces of tattooing. Mr. Hoffmann found vessels containing red ochre and cakes of a black substance, composed apparently of the hydro-oxide of manganese, as well as some very sharp needles of bone, wood, and the fins of fish. These needles are still preferred, by tribes which practise tattooing, to those of steel, which they could procure easily.

THE publications of the Russian Geological Commission succeed one another rapidly, each of them containing some important contribution to the geology of Russia. The third fasciculus of its *Memoirs*, just published, contains a monograph by M. Tschernyschen, on the Devonian deposits of Russia. The interest awakened by the recent explorations in the Ural Mountains, where deposits quite analogous to those of the Hartz and the Eifel have been discovered, induced the author to describe some of the old collections of the Palæontological Museum at the Mining Institute at St. Petersburg, namely, that of Meglitzky and Antonoff, from the shores of Lake Kotluban, in the Southern Ural. These fossils proved to be Upper Devonian, and many of them quite new for the Ural region; they also enabled the author to give the following scheme of the Devonian deposits of the Ural mountains:—The Lower Devonian is represented by schists and sandstones, with numerous remains of *Atypa hatilingius*, Schmer, and by the limestones of Nyazepetrovsk and Yurezan (upper part of the Lower Devonian), which are akin to the Greifenstein limestones and the Wissenbacher schists of Germany. The Middle Devonian consists of sandy limestones and unfossiliferous marls, which appear on the Ay and Yurezan rivers from beneath dolomites. The rich fauna of the former corresponds to that of the Eifel. And, finally, the Upper Devonian is represented by the limestones of Lake Kotluban, of Murzataeva, River Vilva, the mouth of Sulema, &c.; it corresponds to the Cuboides and Goniatis schists of the Eifel and Hartz, and is covered by the Clymenia limestones of Verkhneuralsk, which appear, in the Hartz, above the so-called *Intumescens-stufe*. Comparing further the Devonian deposits

of the Ural with those of the Petchora, as described by Keyserling, of the Government of Orel, according to his own observations, and of North-Western Russia, the author arrives at the following interesting conclusions:—On the Petchora we have Lower Devonian deposits of the Vol and Ukhta rivers, akin to the Middle Devonian of the Ural and Western Europe; and an upper layer (on the Middle and Lower Ukhta) which corresponds to the Goniatis schists of the Ural and the *Goniatis intumescens* deposits of the Rhine. The Middle Devonian of the Ural and Petchora correspond to the dolomitic limestones of Livonia and to the lower deposits of the south-east, which are rich in corals and tentaculites. For several interesting details we must refer, however, to the paper itself, which is followed by a *résumé* in German (twenty-four quarto pages), and is accompanied by three plates representing Devonian fossils.

THE geological map of Russia, prepared by the Geological Commission, is well advanced, and during this year we expect the appearance of three sheets including a part of the Ural Mountains, the government of Kostroma, and the Volga-and-Don region. As to the last issue of the *Izvestia* of the Commission, we notice in it a paper by M. Mikhalsky on the structure of the Kielce Mountains and the surrounding region. Its chief features were already known from the explorations of Pusch and Roemer, but the very age of the deposits of this region (Devonian, Trias, Jura, and Chalk) had to be determined with more precision. The Trias reaches a great development, and M. Mikhalsky confirms Prof. Roemer's affirmation that all three chief subdivisions of the German Trias are found in Poland. The Jurassic formation is also represented by three different deposits: one of them closely corresponds to the Jurassic deposits of Southern Germany, namely, to those of Bavaria, as already indicated by Ludwig Ammon. Another, which contains the *Exogyra virgula*, together with *Gryphaea dilatata* and *Pecten inaequicostatus*, seems to be an intermediate deposit between the Oxfordian and Kimmeridge deposits of England. As to the Oolite, its fossils are more like those of France and Middle Germany, but substantially differ from those of South Germany. A series of Jurassic deposits at the Peklo village is interesting, as it affords a remarkable mixture of the Upper Jurassic fauna of Middle Europe with the Jurassic fauna of Russia. It contains the ammonite *Perisphinctes virgatus*, which has been found only in the Russian Jurassic formation. As to the Chalk, it is represented in the south-west by much dislocated deposits containing *Inoceramus Crispii* and *I. striatus*, both characteristic of the Senonian subdivision. The whole is covered with thick deposits of Boulder Clay, containing Scandinavian and local boulders; one boulder of granite has been observed on the summit of the northern chain of the Kielce ridges, and, judging from the general character of the glacial deposits, the author believes in the extension of the Scandinavian ice-sheet as far as the Kielce ridge.

Science states that the U.S. Bureau of Navigation of the Navy Department reports that 145 compasses with the four-needle card have been issued to ships during the past year, and that they have given general satisfaction, the behaviour of the improved compasses used by the Greeley relief expedition in high latitudes being especially commended. This expedition gathered considerable data concerning the variation of the compass in high latitudes, but, owing to its speedy return, none were obtained concerning the magnetic force and dip. The data concerning compass variations, collected by the Department during the past year, are in course of preparation for publication. Professional paper No. 17, entitled the "Magnetism of Iron and Steel Ships," is in the press; and No. 18, on "Deviations of the Compass in U.S. Naval Vessels," is nearly ready. Preparations have been made for a careful examination of the magnetic character of the new steel vessels, and a compass station is to be



established in Narragansett Bay. The instruments for a compass testing-house are now in the possession of the Bureau, and a building will be erected when the appropriation is made. In view of the probable necessity of compensating the compasses of these new vessels, a binnacle has been designed in the Bureau for this purpose, and it will be placed in the *Dolphin* to be tested.

IN accordance with a recommendation of the recent Geodetic Conference, we learn from *Science* a series of observations for latitude is to be made at the U.S. Naval Observatory, which, taken in connection with a similar series made elsewhere, and compared with observations made after an interval of some years, will assist in determining whether there are any slow changes taking place in latitudes upon the earth. Lisbon, which is very near the same parallel as Washington, is expected to co-operate with the Naval Observatory. The observations will be made with the prime vertical instrument; and at Washington a line officer of the navy will be detailed for the work, which will probably require several years.

AT University College, London, Dr. J. A. Fleming will commence a course of lectures and demonstrations on Modern Applications of Electricity in the Arts, on Friday, February 6, at 4 p.m. The first lecture will be open to the public without payment or tickets.

THE *Revue Scientifique* now publishes a weekly supplement containing reports of the proceedings of the Paris scientific societies; this supplement may be obtained separately.

THE additions to the Zoological Society's Gardens during the past week include a Moose (*Alces maculis*) from Russia, presented by Mr. Evelyn Hubbard; a Goshawk (*Asur palumbarius*), British, presented by Mr. W. H. St. Quintin, F.Z.S.; a Pink-footed Goose (*Anser brachyrhynchus*), British, presented by Major W. H. Fielden, C.M.Z.S.; two Yaks (*Poephagus grunniens*) from Tibet, six Dunlins (*Tringa alpina*), British, purchased.

### GEOGRAPHICAL NOTES

AT the meeting of the Paris Geographical Society on the 9th inst. M. Maunoir read a paper on the explorations of Capt. Aymonier in Indo-China in 1883 and 1884, during which he collected many epigraphical documents and notes on Northern Laos and the basin of the Mouna. On December 10 the traveller was to leave Saigon for Binh-Thuan, in the extreme south of Annam, to study the monuments left behind by the Cham. It is wholly new ground. A letter was read from the French Consul at Zanzibar giving the latest geographical news from Eastern Africa. M. Deloncle summarised his recent exploration in Malacca. M. Paul Fauque, who is charged by the Ministry of Education with a scientific mission to Sumatra, described the results of his journey, and gave more details on the character, manners, and customs of the natives of the Siak country and of the Kingdom of Acheen. He added much valuable information on the geography, natural history, and mineralogy of this great island. His collections are to be distributed amongst various museums in France. The following medals were awarded:—A gold medal to M. de Foucauld for his journey in South Morocco and his exploration of the southern extremity of the Atlas Mountains; a gold medal to Dr. Neis for four journeys in Indo-China and in the hitherto unexplored parts of Laos; the La Roquette prize to the Danish summary of geographical and geographical enterprises in Greenland (*Meldeleiser om Grønland*); the Jernard prize to M. Leroux, the publisher, for the volume of documents on the history of geography from the thirteenth to the sixteenth century; and the Echard prize to M. Dumas Vorzet for maps and cartographical labours. M. Allain referred to the defectiveness of geographical education in some public educational establishments, and advised that all the State libraries in Paris should be provided with as complete a collection as possible of geographical works.

THE editor of *Petermann's Mittheilungen* has issued a circular with the January number of his journal, giving notice that in

future the monthly parts will consist of three main sections: (1) Original papers, as heretofore; (2) a monthly report of the advances of geographical discovery and colonisation in countries outside Europe; (3) a literary section referring to recent geographical and cartographical works, with the exception of pure travels, which will be dealt with in the second section. The valuable supplementary parts (*Ergänzungsheften*) will be continued as before.

THE report has been published of a journey by four French officers among the Muongs of the Black River, which enters the Red River of Tonquin a little below Sontay. These tribes are described as more civilised than the Moïs of Cochinchina; they are practically independent, although the Annamites profess to appoint their chiefs; they are very warlike, intelligent, and industrious, making their own arms, which are sometimes very beautiful. After having acquired all the information they could as to Muong silk and silk manufactures, the travellers explored the mountainous regions among the district. There are gold mines in the hills worked by Chinese, but at some of them they have armed themselves in great numbers since the recent troubles, and will allow no one, French or Muong, to approach them. The members of the expedition, however, saw enough to convince them that the district is rich in minerals, especially gold.

THE Argentine expedition to the Chaco will, it is stated, have the result of adding a large territory to civilisation and agriculture. This forms for the most part the basin of the Rio Bermejo, or Red River, which flows down from the Andes, and commences to be of importance towards the 61st degree of longitude. Soon after it receives the waters of the Tenco, and should be navigable unless its bed is obstructed by the trunks of trees and if it does not traverse lagoons where its channel will be difficult to find. It flows in a south-westerly direction, and enters the Rio Paraguay after a course of about 500 kilometres. The districts through which it flows are well-wooded; they are inhabited by tribes of Indians, whose favourite weapon is the arrow, and who, when they do not live by hunting and fishing, exist on the locusts which abound and on the cattle which they can contrive to steal from the Argentines. The number of inhabitants of this part of the Chaco is estimated at 10,000.

*Globus* publishes a letter from Dr. Claus, a member of the Steinen expedition into one of the most unexplored parts of Brazil. It was for some time doubtful whether the expedition was examining the Xingu, or some other neighbouring tributary of the Amazon. It appears now that the Xingu was the river explored. On May 26, 1884, the expedition left Cuyabá, the capital of the Brazilian province, Matto Grosso, arrived on July 20 at Rio Batovy, and in the end of October at Pará, at the mouth of the Amazon. Dr. Claus writes that they completely carried out their programme. After a journey of two months from Cuyabá, they sailed in canoes down a small river, which, according to the maps, should belong to the Xingu region. The districts around the source of this river are inhabited by numerous tribes who have never met with white men, and who use only implements of stone and bone. At the 12th parallel they came on the Xingu. The cataracts caused the travellers the utmost difficulty, and they also suffered much from hunger. For a whole month they had nothing but beans to eat. During part of the descent of the Xingu, also, they met with the same troubles and privations; but towards the end of their journey they fared much better, passing along from one Indian village to another. On October 15 they arrived at the first Brazilian settlement on the 4th parallel. The head of the expedition has a large collection of Indian objects, and the collections of the others, though much damaged by water, are otherwise safe.

MR. WM. CAMERON, F.G.S., an indefatigable explorer of Malayan countries, has just prepared, at Singapore, a large and elaborate map, on a scale of half an inch to the mile, of districts recently explored by him in Selangor, Ulu Selangor, Sungei Ujong, and other parts of the Malay Peninsula. The map is said to be excellently drawn up, and to be a valuable acquisition to our existing geographical knowledge of the Malay Peninsula, which is somewhat limited.

A GEOGRAPHICAL conference is about to be held in Melbourne on the occasion of the first annual meeting of the Victorian branch of the Geographical Society of Australia. Members of the general council of the Society, as well as of the local councils